

FIG. 1 (PRIOR ART)

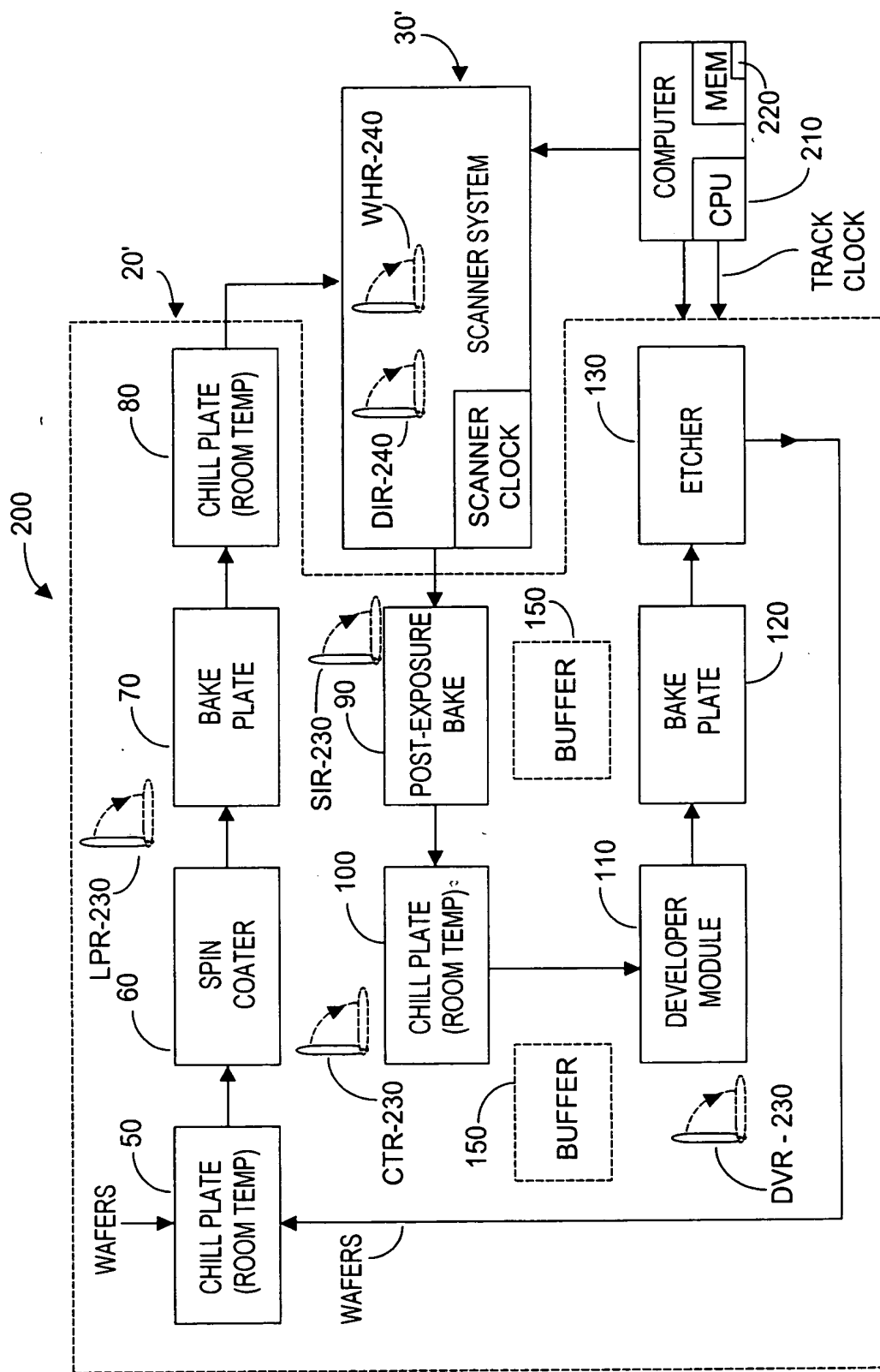
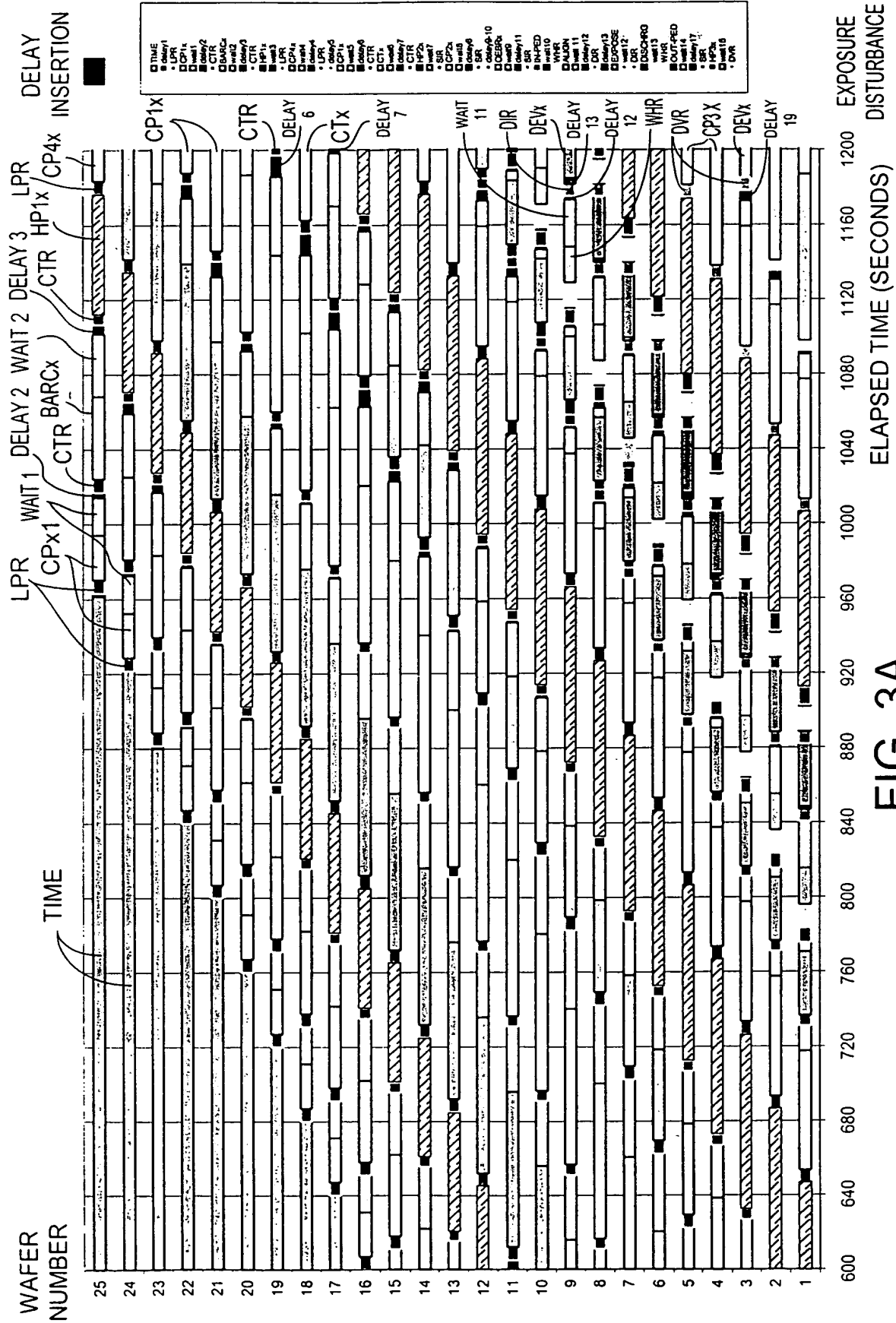
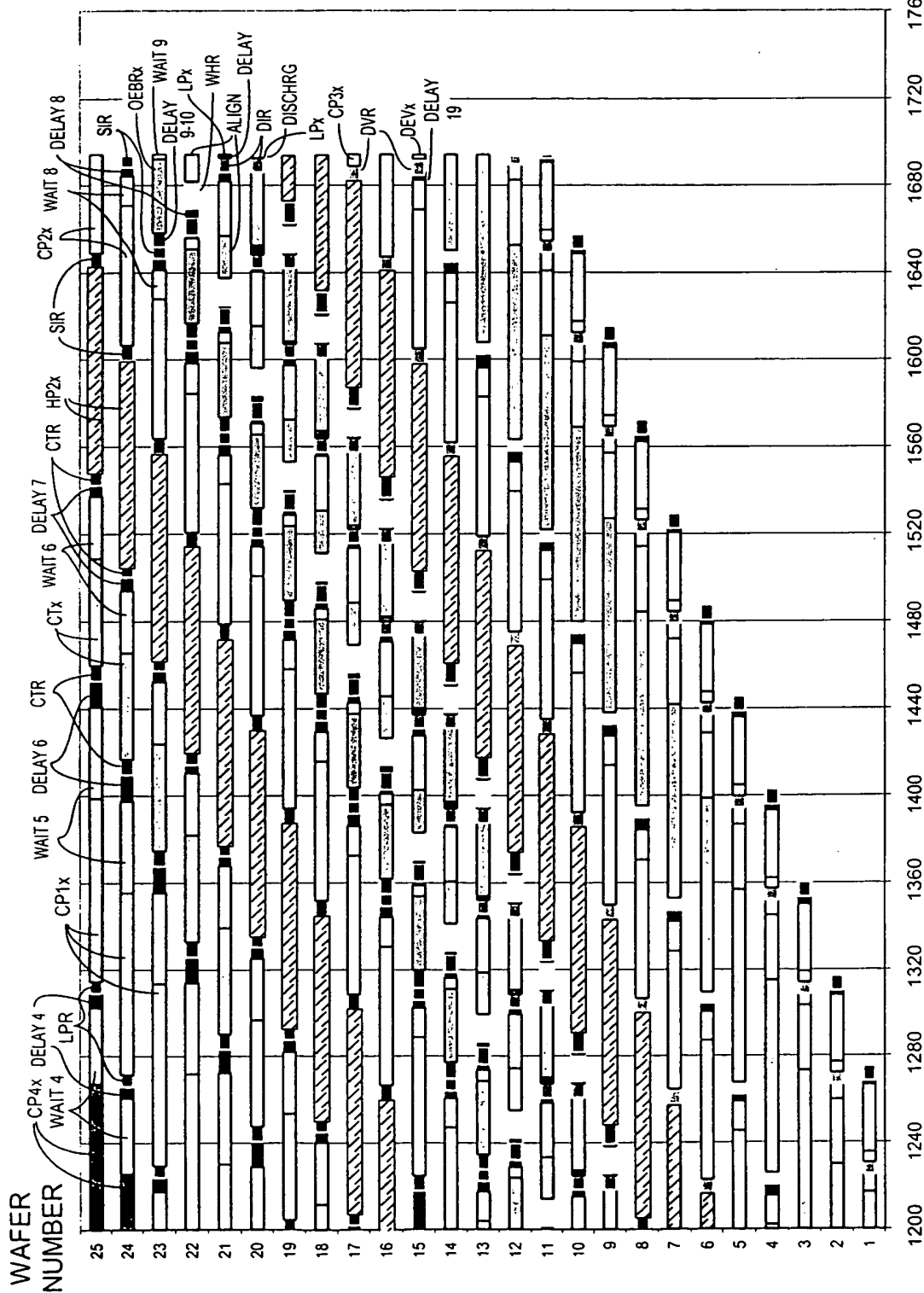


FIG. 2



DELAY
INSERTION



EXPOSURE
DISTURBANCE

FIG. 3B

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 |
|-----------|----------|--------|---------|------|-------|--------|---------|------|-------|--------|---------|------|
| WAFER NO. | δ_EXPOSE | TIME | DELAY 1 | LPR | CP1x | WAIT 1 | DELAY 2 | CTR | BARCx | WAIT 2 | DELAY 3 | CTR |
| 1 | 1.54 | 0.00 | 0.00 | 7.00 | 24.00 | 20.00 | 0.00 | 7.00 | 44.00 | 33.50 | 0.00 | 5.50 |
| 2 | 0.00 | 40.00 | 0.00 | 7.00 | 24.00 | 20.00 | 0.00 | 7.00 | 44.00 | 33.50 | 0.00 | 5.50 |
| 3 | 1.86 | 80.00 | 0.00 | 7.00 | 24.00 | 20.00 | 0.00 | 7.00 | 44.00 | 33.50 | 0.00 | 5.50 |
| 4 | 2.98 | 120.00 | 0.00 | 7.00 | 24.00 | 20.00 | 0.00 | 7.00 | 44.00 | 33.50 | 0.00 | 5.50 |
| 5 | 3.39 | 160.00 | 0.00 | 7.00 | 24.00 | 20.00 | 0.00 | 7.00 | 44.00 | 33.50 | 0.00 | 5.50 |
| 6 | 1.64 | 200.00 | 0.00 | 7.00 | 24.00 | 20.00 | 0.00 | 7.00 | 44.00 | 33.50 | 0.00 | 5.50 |
| 7 | 1.71 | 240.00 | 0.00 | 7.00 | 24.00 | 20.00 | 0.00 | 7.00 | 44.00 | 33.50 | 0.00 | 5.50 |
| 8 | 1.90 | 280.00 | 0.00 | 7.00 | 24.00 | 20.00 | 0.00 | 7.00 | 44.00 | 33.50 | 0.00 | 5.50 |
| 9 | 3.16 | 320.00 | 0.00 | 7.00 | 24.00 | 20.00 | 0.00 | 7.00 | 44.00 | 33.50 | 0.00 | 5.50 |
| 10 | 2.45 | 360.00 | 0.00 | 7.00 | 24.00 | 20.00 | 0.00 | 7.00 | 44.00 | 33.50 | 0.00 | 5.50 |
| 11 | 2.76 | 400.00 | 0.00 | 7.00 | 24.00 | 20.00 | 0.00 | 7.00 | 44.00 | 33.50 | 0.00 | 5.50 |
| 12 | 1.95 | 440.00 | 0.00 | 7.00 | 24.00 | 20.00 | 0.00 | 7.00 | 44.00 | 33.50 | 0.00 | 5.50 |
| 13 | 1.82 | 480.00 | 0.00 | 7.00 | 24.00 | 20.00 | 0.00 | 7.00 | 44.00 | 33.50 | 0.00 | 5.50 |
| 14 | 3.20 | 520.00 | 0.00 | 7.00 | 24.00 | 20.00 | 0.00 | 7.00 | 44.00 | 33.50 | 0.00 | 5.50 |
| 15 | 2.92 | 560.00 | 0.00 | 7.00 | 24.00 | 20.00 | 0.00 | 7.00 | 44.00 | 33.50 | 0.00 | 5.50 |
| 16 | 2.14 | 600.00 | 0.00 | 7.00 | 24.00 | 20.00 | 0.00 | 7.00 | 44.00 | 33.50 | 0.00 | 5.50 |
| 17 | 1.77 | 640.00 | 0.00 | 7.00 | 24.00 | 20.00 | 0.00 | 7.00 | 44.00 | 33.50 | 0.00 | 5.50 |
| 18 | 3.18 | 680.00 | 0.00 | 7.00 | 24.00 | 20.00 | 0.00 | 7.00 | 44.00 | 33.50 | 0.00 | 5.50 |
| 19 | 1.23 | 720.00 | 0.00 | 7.00 | 24.00 | 20.00 | 0.00 | 7.00 | 44.00 | 33.50 | 0.00 | 5.50 |
| 20 | 4.14 | 760.00 | 0.00 | 7.00 | 24.00 | 20.00 | 0.00 | 7.00 | 44.00 | 33.50 | 1.54 | 5.50 |
| 21 | 3.14 | 800.00 | 0.00 | 7.00 | 24.00 | 20.00 | 0.00 | 7.00 | 44.00 | 33.50 | 1.54 | 5.50 |
| 22 | 3.22 | 840.00 | 0.00 | 7.00 | 24.00 | 20.00 | 1.54 | 7.00 | 44.00 | 33.50 | 1.86 | 5.50 |
| 23 | 1.91 | 880.00 | 1.54 | 7.00 | 24.00 | 20.00 | 0.00 | 7.00 | 44.00 | 33.50 | 4.84 | 5.50 |
| 24 | 1.53 | 921.54 | 0.00 | 7.00 | 24.00 | 20.00 | 1.86 | 7.00 | 44.00 | 33.50 | 6.37 | 5.50 |
| 25 | 0.00 | 961.54 | 1.86 | 7.00 | 24.00 | 20.00 | 2.98 | 7.00 | 44.00 | 33.50 | 5.03 | 5.50 |

FIG. 4A

[illegible]

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| (27) | (28) | (29) | (30) | (31) | (32) | (33) | (34) | (35) | (36) | (37) | (38) | (39) |
|--------|---------|------|-------|--------|------|-------|--------|---------|------|------------|-------|--------|
| WAIT 6 | DELAY 7 | CTR | HP2x | WAIT 7 | SIR | CP2x | WAIT 8 | DELAY 8 | SIR | DELAY 9-10 | OEBRx | WAIT 9 |
| 28.50 | 0.00 | 5.50 | 94.00 | 0.00 | 7.00 | 64.00 | 13.50 | 0.00 | 5.50 | 0.00 | 34.00 | 5.00 |
| 28.50 | 0.00 | 5.50 | 94.00 | 0.00 | 7.00 | 64.00 | 13.50 | 0.00 | 5.50 | 0.00 | 34.00 | 5.00 |
| 28.50 | 0.00 | 5.50 | 94.00 | 0.00 | 7.00 | 64.00 | 13.50 | 0.00 | 5.50 | 0.00 | 34.00 | 5.00 |
| 28.50 | 0.00 | 5.50 | 94.00 | 0.00 | 7.00 | 64.00 | 13.50 | 0.00 | 5.50 | 0.00 | 34.00 | 5.00 |
| 28.50 | 0.00 | 5.50 | 94.00 | 0.00 | 7.00 | 64.00 | 13.50 | 0.00 | 5.50 | 1.54 | 34.00 | 5.00 |
| 28.50 | 0.00 | 5.50 | 94.00 | 0.00 | 7.00 | 64.00 | 13.50 | 0.00 | 5.50 | 1.54 | 34.00 | 5.00 |
| 28.50 | 0.00 | 5.50 | 94.00 | 0.00 | 7.00 | 64.00 | 13.50 | 0.00 | 5.50 | 3.40 | 34.00 | 5.00 |
| 28.50 | 0.00 | 5.50 | 94.00 | 0.00 | 7.00 | 64.00 | 13.50 | 1.54 | 5.50 | 4.84 | 34.00 | 5.00 |
| 28.50 | 0.00 | 5.50 | 94.00 | 0.00 | 7.00 | 64.00 | 13.50 | 1.54 | 5.50 | 8.23 | 34.00 | 5.00 |
| 28.50 | 1.54 | 5.50 | 94.00 | 0.00 | 7.00 | 64.00 | 13.50 | 1.86 | 5.50 | 8.01 | 34.00 | 5.00 |
| 28.50 | 1.54 | 5.50 | 94.00 | 0.00 | 7.00 | 64.00 | 13.50 | 4.84 | 5.50 | 6.74 | 34.00 | 5.00 |
| 28.50 | 1.86 | 5.50 | 94.00 | 0.00 | 7.00 | 64.00 | 13.50 | 6.37 | 5.50 | 5.25 | 34.00 | 5.00 |
| 28.50 | 4.84 | 5.50 | 94.00 | 0.00 | 7.00 | 64.00 | 13.50 | 5.03 | 5.50 | 6.77 | 34.00 | 5.00 |
| 28.50 | 6.37 | 5.50 | 94.00 | 0.00 | 7.00 | 64.00 | 13.50 | 3.35 | 5.50 | 7.51 | 34.00 | 5.00 |
| 28.50 | 5.03 | 5.50 | 94.00 | 0.00 | 7.00 | 64.00 | 13.50 | 3.61 | 5.50 | 8.37 | 34.00 | 5.00 |
| 28.50 | 3.35 | 5.50 | 94.00 | 0.00 | 7.00 | 64.00 | 13.50 | 5.06 | 5.50 | 7.16 | 34.00 | 5.00 |
| 28.50 | 3.61 | 5.50 | 94.00 | 0.00 | 7.00 | 64.00 | 13.50 | 5.61 | 5.50 | 6.54 | 34.00 | 5.00 |
| 28.50 | 5.06 | 5.50 | 94.00 | 0.00 | 7.00 | 64.00 | 13.50 | 5.21 | 5.50 | 6.97 | 34.00 | 5.00 |
| 28.50 | 5.61 | 5.50 | 94.00 | 0.00 | 7.00 | 64.00 | 13.50 | 4.72 | 5.50 | 7.94 | 34.00 | 5.00 |
| 28.50 | 5.21 | 5.50 | 94.00 | 0.00 | 7.00 | 64.00 | 13.50 | 3.77 | 5.50 | 8.26 | 34.00 | 5.00 |
| 28.50 | 4.72 | 5.50 | 94.00 | 0.00 | 7.00 | 64.00 | 13.50 | 5.02 | 5.50 | 6.83 | 34.00 | 5.00 |
| 28.50 | 3.77 | 5.50 | 94.00 | 0.00 | 7.00 | 64.00 | 13.50 | 6.11 | 5.50 | 7.10 | 34.00 | 5.00 |
| 28.50 | 5.02 | 5.50 | 94.00 | 0.00 | 7.00 | 64.00 | 13.50 | 5.06 | 5.50 | 6.19 | 34.00 | 1.94 |
| 28.50 | 6.11 | 5.50 | 94.00 | 0.00 | 7.00 | 64.00 | 13.50 | 3.91 | 5.50 | 0.36 | 0.00 | 0.00 |
| 28.50 | 5.06 | 5.50 | 94.00 | 0.00 | 7.00 | 45.12 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

FIG. 4C

| 40 | 41 | 42 | 43 | 44 | 45 | 46 | 47 | 48 | 49 | 50 | 51 | 52 |
|----------|------|--------|---------|-------|-------|---------|----------|------|----------|--------|---------|------|
| DELAY 11 | SIR | IN-PED | WAIT 10 | WHR | ALIGN | WAIT 11 | DELAY 12 | DIR | DELAY 13 | EXPOSE | WAIT 12 | DIR |
| 0.00 | 8.00 | 0.00 | 0.00 | 12.50 | 19.30 | 25.00 | 0.00 | 6.50 | 1.54 | 33.50 | 0.00 | 6.50 |
| 0.00 | 8.00 | 0.00 | 0.00 | 12.50 | 19.30 | 25.00 | 1.54 | 6.50 | 0.00 | 33.50 | 0.00 | 6.50 |
| 0.00 | 8.00 | 1.54 | 0.00 | 12.50 | 19.30 | 25.00 | 0.00 | 6.50 | 1.86 | 33.50 | 0.00 | 6.50 |
| 1.54 | 8.00 | 0.00 | 0.00 | 12.50 | 19.30 | 25.00 | 1.86 | 6.50 | 2.98 | 33.50 | 0.00 | 6.50 |
| 0.00 | 8.00 | 1.86 | 0.00 | 12.50 | 19.30 | 25.00 | 2.98 | 6.50 | 3.39 | 33.50 | 0.00 | 6.50 |
| 1.86 | 8.00 | 2.98 | 0.00 | 12.50 | 19.30 | 25.00 | 3.39 | 6.50 | 1.64 | 33.50 | 0.00 | 6.50 |
| 2.98 | 8.00 | 3.39 | 0.00 | 12.50 | 19.30 | 25.00 | 1.64 | 6.50 | 1.71 | 33.50 | 0.00 | 6.50 |
| 3.39 | 8.00 | 1.64 | 0.00 | 12.50 | 19.30 | 25.00 | 1.71 | 6.50 | 1.90 | 33.50 | 0.00 | 6.50 |
| 1.64 | 8.00 | 1.71 | 0.00 | 12.50 | 19.30 | 25.00 | 1.90 | 6.50 | 3.16 | 33.50 | 0.00 | 6.50 |
| 1.71 | 8.00 | 1.90 | 0.00 | 12.50 | 19.30 | 25.00 | 3.16 | 6.50 | 2.45 | 33.50 | 0.00 | 6.50 |
| 1.90 | 8.00 | 3.16 | 0.00 | 12.50 | 19.30 | 25.00 | 2.45 | 6.50 | 2.76 | 33.50 | 0.00 | 6.50 |
| 3.16 | 8.00 | 2.45 | 0.00 | 12.50 | 19.30 | 25.00 | 2.76 | 6.50 | 1.95 | 33.50 | 0.00 | 6.50 |
| 2.45 | 8.00 | 2.76 | 0.00 | 12.50 | 19.30 | 25.00 | 1.95 | 6.50 | 1.82 | 33.50 | 0.00 | 6.50 |
| 2.76 | 8.00 | 1.95 | 0.00 | 12.50 | 19.30 | 25.00 | 1.82 | 6.50 | 3.20 | 33.50 | 0.00 | 6.50 |
| 1.95 | 8.00 | 1.82 | 0.00 | 12.50 | 19.30 | 25.00 | 3.20 | 6.50 | 2.92 | 33.50 | 0.00 | 6.50 |
| 1.82 | 8.00 | 3.20 | 0.00 | 12.50 | 19.30 | 25.00 | 2.92 | 6.50 | 2.14 | 33.50 | 0.00 | 6.50 |
| 3.20 | 8.00 | 2.92 | 0.00 | 12.50 | 19.30 | 25.00 | 2.14 | 6.50 | 1.77 | 33.50 | 0.00 | 6.50 |
| 2.92 | 8.00 | 2.14 | 0.00 | 12.50 | 19.30 | 25.00 | 1.77 | 6.50 | 3.18 | 33.50 | 0.00 | 6.50 |
| 2.14 | 8.00 | 1.77 | 0.00 | 12.50 | 19.30 | 25.00 | 3.18 | 6.50 | 1.23 | 33.50 | 0.00 | 6.50 |
| 1.77 | 8.00 | 3.18 | 0.00 | 12.50 | 19.30 | 25.00 | 1.23 | 6.50 | 4.14 | 33.50 | 0.00 | 6.50 |
| 3.18 | 8.00 | 1.23 | 0.00 | 12.50 | 19.30 | 25.00 | 4.14 | 6.50 | 1.50 | 0.00 | 0.00 | 0.00 |
| 1.23 | 8.00 | 4.14 | 0.00 | 12.50 | 12.30 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

FIG. 4D

| (53) | (54) | (55) | (56) | (57) | (58) | (59) | (60) | (61) | (62) | (63) | (64) | (65) |
|---------|---------|-------|---------|---------|----------|------|-------|---------|------|-------|---------|----------|
| DISCHRG | WAIT 13 | WHR | OUT-PED | WAIT 14 | DELAY 17 | SIR | HP3x | WAIT 15 | DVR | CP3x | WAIT 16 | DELAY 19 |
| 1.00 | 0.00 | 12.40 | 1.00 | 0.00 | 0.00 | 9.50 | 94.00 | 0.00 | 7.00 | 64.00 | 13.50 | 1.86 |
| 1.00 | 0.00 | 12.40 | 1.00 | 0.00 | 0.00 | 9.50 | 94.00 | 0.00 | 7.00 | 64.00 | 13.50 | 4.84 |
| 1.00 | 0.00 | 12.40 | 1.00 | 0.00 | 0.00 | 9.50 | 94.00 | 0.00 | 7.00 | 64.00 | 13.50 | 6.37 |
| 1.00 | 0.00 | 12.40 | 1.00 | 0.00 | 0.00 | 9.50 | 94.00 | 0.00 | 7.00 | 64.00 | 13.50 | 5.03 |
| 1.00 | 0.00 | 12.40 | 1.00 | 0.00 | 0.00 | 9.50 | 94.00 | 0.00 | 7.00 | 64.00 | 13.50 | 3.35 |
| 1.00 | 0.00 | 12.40 | 1.00 | 0.00 | 0.00 | 9.50 | 94.00 | 0.00 | 7.00 | 64.00 | 13.50 | 3.61 |
| 1.00 | 0.00 | 12.40 | 1.00 | 0.00 | 0.00 | 9.50 | 94.00 | 0.00 | 7.00 | 64.00 | 13.50 | 5.06 |
| 1.00 | 0.00 | 12.40 | 1.00 | 0.00 | 0.00 | 9.50 | 94.00 | 0.00 | 7.00 | 64.00 | 13.50 | 5.61 |
| 1.00 | 0.00 | 12.40 | 1.00 | 0.00 | 0.00 | 9.50 | 94.00 | 0.00 | 7.00 | 64.00 | 13.50 | 5.21 |
| 1.00 | 0.00 | 12.40 | 1.00 | 0.00 | 0.00 | 9.50 | 94.00 | 0.00 | 7.00 | 64.00 | 13.50 | 4.72 |
| 1.00 | 0.00 | 12.40 | 1.00 | 0.00 | 0.00 | 9.50 | 94.00 | 0.00 | 7.00 | 64.00 | 13.50 | 3.77 |
| 1.00 | 0.00 | 12.40 | 1.00 | 0.00 | 0.00 | 9.50 | 94.00 | 0.00 | 7.00 | 64.00 | 13.50 | 5.02 |
| 1.00 | 0.00 | 12.40 | 1.00 | 0.00 | 0.00 | 9.50 | 94.00 | 0.00 | 7.00 | 64.00 | 13.50 | 6.11 |
| 1.00 | 0.00 | 12.40 | 1.00 | 0.00 | 0.00 | 9.50 | 94.00 | 0.00 | 7.00 | 64.00 | 13.50 | 5.06 |
| 1.00 | 0.00 | 12.40 | 1.00 | 0.00 | 0.00 | 9.50 | 94.00 | 0.00 | 7.00 | 64.00 | 13.50 | 3.91 |
| 1.00 | 0.00 | 12.40 | 1.00 | 0.00 | 0.00 | 9.50 | 94.00 | 0.00 | 7.00 | 46.92 | 0.00 | 0.00 |
| 1.00 | 0.00 | 12.40 | 1.00 | 0.00 | 0.00 | 9.50 | 94.00 | 0.00 | 7.00 | 5.16 | 0.00 | 0.00 |
| 1.00 | 0.00 | 12.40 | 1.00 | 0.00 | 0.00 | 9.50 | 62.97 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 1.00 | 0.00 | 12.40 | 1.00 | 0.00 | 0.00 | 9.50 | 21.74 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 1.00 | 0.00 | 0.50 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

FIG. 4E

[illegible]

LE 4 G